

TABOO TRANSGRESSION TRANSCENDENCE

IN ART & SCIENCE 2018

Editors:

Dalila Honorato | María Antonia González Valerio

Marta de Menezes | Andreas Giannakouloupoulos

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Editors:

Dalila Honorato
María Antonia González Valerio
Marta de Menezes
Andreas Giannakouloupoulos

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Agents without Agency: Artificial Intelligence as Artistic Medium

ABSTRACT

Discussions on the use of machine learning and artificial intelligence (AI) in the production of art have gained attention in recent years. In this paper, we critically address the binary narratives surrounding AI that ponder it either as *tool* or as *agent* of artistic production. Later, we discuss the general idea of AI systems as potentially replacing humans in different endeavors by presenting some arguments posited by Artificial Intelligence expert Kai-Fu Lee. Afterwards, we submit the idea of AI as artistic medium by drawing from discussions on the concept of medium in art. We show that the issue of *AI-tool* versus *AI-agent* is a continuous narrative that dates back to the so-called algorithmic art or computer art of the 1960s and 70s. We then tie the idea of artistic medium with the issue of artistic agency and artistic identity.

KEYWORDS Artificial Intelligence, Computational Creativity, Medium, Computer Art.

INTRODUCTION

The incorporation of machine learning or artificial intelligence (AI) into the production of art has gained significant attention in recent years. In 2017, for example, art and artificial intelligence became the theme of the Ars Electronica festival under the title *The Other I*, and in October 2018, Christie's auctioned an AI-generated portrait for almost half a million dollars (after it was originally valued at only ten thousand dollars), which stirred controversy among art critics and collectors.

Art is regarded as a quintessential human activity, which, not surprisingly, is prominently featured in Donald Brown's famous "list of human universals" (1991). Narratives surrounding creative AI, therefore, often advance the idea that art-production is a somewhat *meaningful threshold* that makes AI more human-like. In other words, that when artificial intelligence systems are *creative* (i.e., produce art), some important or threatening line has been crossed. These narratives imply that the value of AI-generated art lies not in the visual features of the works but in the agency of the system, which is supposedly facilitated by the absence of human intervention.

ART AND ARTIFICIAL INTELLIGENCE—A POLARIZED DISCOURSE

Recent discussions on the achievements in computational creativity and the use of AI in the production of art are often dominated by the opposition between AIs as tools versus AIs as agents. In its technical sense, *agent* is used to refer to a program or a module, whose functioning is relatively independent from the designer's interference once the program is made to run (Boden 2010:165). However, in these discussions, the word agent also conveys the idea that AI has come to gradually occupy a position different from that of a mere *tool*, i.e. an artifact devoid of agency and used by humans to create works of art. Instead, AIs are believed to figure as artists themselves to the extent that an ever-growing amount of creative solutions can be performed by the program with little or—perhaps in the nearest future—no intervention by its human designer. Hence, one seems to be faced with two conflicting narratives: Are AI systems tools or agents? Perhaps, as some believe, at the moment AI systems work more like tools but they are bound to become agents in the future. However, overemphasizing this opposition leads to two bifurcating accounts on the matter: on the one hand, throwaway predictions of humans being endangered in what seems to be the most human of activities; on the other hand, dismissing recent achievements in computational creativity as uninteresting, non-creative, or having serious misconceptions about art. This opposition is further exacerbated by a hasty reasoning where denying AIs' artistic agency or the possibility of them being *truly* creative (as opposed to only *seemingly* creative) is interpreted as denying AIs' meaningful contributions to the creation of art. Neither of these alternatives, however, seems to adequately assess and properly conceptualize the status of AI in the production art.

Although many authors defend the agency of computational creativity, the literature on the use of AIs in the study and production of art abounds in arguments as to why AIs cannot legitimately be seen as artists. One of these arguments is articulated by Aaron Herzmann (Herzmann 2018), who relies on the view of art as a communicative act between social agents. Hence, according to Herzmann, to the extent that an AI system is not a social agent, it also cannot be an artist. Conversely, any attribution of artistic agency to AIs depends on a possibility of its functioning like, or at least being perceived as a social agent. Since Herzmann associates feeling, consciousness and personhood with social agency, his argument is compatible with Anthony O'Hear's contention that art is an exchange between subjectivities, and therefore exclusively human (O'Hear 1995). On the other hand, since the arguments against predicating artistic agency to AIs gravitate towards the attributes of human beings which are also seen as preconditions for art, the opposite views elaborate on a possibility of treating them in functionalist and even technical computer terms, thereby effectively questioning whether art is inherently and exclusively human. In this vein, Margaret Boden (2004) defends computational creativity by sketching functionalist conceptions of consciousness and understanding, which debunk what we have termed elsewhere as 'no consciousness, no art' and 'no understanding, no art' arguments (Suryna and Guzman 2018).

We distinguish three main assumptions underlying projects in computational creativity that advance the idea of an independent artificial artist. First is the assumption of art as a kind of creativity that licenses extrapolations from *creativity* to *art*. In other words, if creativity is treated as a more general term, then what holds true for *creativity* should also hold true for *artistic creativity*. This transition is often not problematized as it seems natural to refer to art while making claims about creativity in general (i.e. if it is creative, it should also be artistic). Defining the necessary properties of art creation then, as Herzmann notices (2018), becomes a matter of spelling out creativity through a set of requirements such as the *creativity tripod* by Colton (2012). However, creativity and artistic creativity are not equivalent; art need not be original and many constituents and accompaniments of artistic practice are not creative per se, such as the tradition of an art medium, the importance of exhibition space and institutions, etc.

The second assumption, which we spelled out elsewhere (Suryna and Guzman 2018), supposes that if an agent produces art-like outcomes, then it should be capable of doing and, perhaps, even understanding art. This manifests in the focus on AI-generated outcomes and their properties such as intrinsic qualities, novelty and whatever property that a given model of creativity specifies, which thus become the grounds for deciding whether a given AI system is capable of producing art or is artistically creative. Such approach is espoused by, among others, Margaret Boden (2004, 2010). The idea behind this assumption seems to be similar to an artistic Turing test: if one is faced with the outcome of an activity that is sophisticated enough to be a *mark* of intelligence,

i.e., outcomes that can be appreciated for their skillfulness and originality, and be exhibited and sold just like human-made artefacts, then whatever has produced these outcomes must be an agent capable of art creation. This idea offers a contorted version of the *institutional definition* in art (if it is exhibited, it is art) in which if the outcome is perceived as artistic, its creator must be a type of artist.

In a more practical context, this assumption also manifests in delegating the issue of whether AI *understands* what it is doing—a feature we commonly expect from a human artist—to the perception of the outcomes. For instance, when describing Paul the robot, a system that seems to create live portraits from human sitters, creators Patrick Tresset and Oliver Deussen (2014) explicitly state that an important factor for them was that the outcomes looked “informed” as opposed to random, as to imply that the system had the “intention” to create them like that. The robot takes a picture of the sitter and renders it graphically; however, the viewers have the impression that the robot is observing them in real time as the portrait is rendered—not knowing that a picture of them has already been taken. Other practitioners also use audience perception as a main criterion in judging AI as creative and artistic. Colton (2012) speaks about generating outcomes that are more stimulating to the brain (i.e. are richer in information) since the more *engaging* and *interesting* the outcomes are, the bigger the likelihood of the system to be perceived as agentic and creative.

Finally, the third assumption is the possibility of divorcing the concept of creativity from that of value. For example, whereas value is featured in Boden’s account of creativity as one of its three components (the other two being novelty and surprise), she leaves the idea of artistic value underspecified since value, according to Boden, is something that cannot be stipulated and often produces disagreement (2010). To some, however, creativity ought to be divorced from value precisely because it is subject of disagreement or is human-specific, which constraints the attempts at developing a more generalized, functionalist concepts of creativity (Dorin and Korb 2012). Whereas it is true that specific values, such as what counts as being mathematically interesting or worthy of artistic appreciation generates disagreement, instances of creativity across various domains of human inquiry depend on different families or types of value. For example, while creativity in sciences will depend on cognitive and epistemic values, art is dominated by non-epistemic, non-cognitive values such as aesthetic values, relevance to socially or critically engaged topics, etc., as well as values that are not intended from the beginning.

Together these three assumptions lead to the view of art as manufacturing of goods. This is an oversimplified view, in other words, the idea that art is nothing over and above a potentially unrestricted production of objects of art. Alternatively, if art-making is equated to information processing, i.e. what happens between inputs and outputs, then the value of computer creativity seems to be reduced to how it is produced - coming up with a statistically most probable pattern of representation from an ever growing data set. Under this

view, the appreciation of AI-generated art becomes confined to three features: automation, being art-like, and imitating human artists.

The infamous portrait *Edmond de Belamy* - the painting sold at Christie's in 2018 - was created by analyzing dozens of paintings in different historical styles. This work was created by Generative Adversarial Networks (GANs), a system developed by Ian Goodfellow et al., which perform a two-fold layer of pattern recognition (2014). The portrait is credited not to the creators of the program, the Paris-based group Obvious, or to the creator of the technology, Goodfellow et al., but to the algorithm itself, which incidentally *signs* the portrait on the lower right corner. The hype over this portrait owes its financial success, at least in part, to how Christie's announced it as the first ever algorithmically generated artwork to be auctioned, which many critics denounced as misleading. Christie's (and Obvious) presumed that the portrait represented a new era in art production, one in which unsupervised new agents produce visually striking and compelling images that can be attributed to non-human artists

But to understand the technology better, let us consider the painting completed in 2016 as a result of The Next Rembrandt project. The project was created for ING Bank by a team of more than 20 people at the J. Walter Thompson creative firm in Amsterdam, who partnered with Microsoft, TU Delft, and other institutions. For the project, more than 340 paintings by the Dutch artist were analyzed to "distill the artistic DNA of Rembrandt," as promotional videos of the project express. The resulting painting consists of a portrait of a Caucasian male that seems to capture and recreate the style of Rembrandt more than three centuries after his death. In this project, the creators did not attempt to portray the system as agentic, but neither did they credit themselves (or Rembrandt) as *artists*. In this case, artificial intelligence was used as the means to create or find, not a *next Rembrandt* as the name suggests, but the average Rembrandt, a *possible* Rembrandt. These two examples, essentially using similar technologies, make evident that the adscription of artistic agency to AI is contingent and mostly rhetorical.

A DANGER OF REPLACEMENT

Why are we so afraid of AI? Just like the fear of losing jobs to AI, art creation has also suffered from this narrative. This fear stems from the narrative of AI systems as agents. In his latest book *AI Superpowers* (2018), Kai-Fu Lee, artificial intelligence expert and former head of Google China, discusses what he calls the "Risk-of-Replacement charts," where he addresses the areas of human activity that are at risk of being replaced by AI as well as the "safe" areas or areas that are "out of reach" of AI in the foreseeable future. At risk activities, according to Lee, include those that require less social interaction, low dexterity and are highly structured and oriented towards optimization. The "safe" areas include activities that require either higher dexterity or social interaction (or both), and are based on strategy or creativity. By *safe*, however, Lee does not mean that these are professions where AI will play no role, but rather activities

where, at present, are out of the reach of *current* and *foreseeable* AI systems or where the social component plays an important role.

As a first approach, Lee sorts out types of jobs according to four quadrants based on physical labor. The first quadrant, Danger Zone, is specified by low dexterity and low social interaction, and includes jobs like dishwasher, cashier, and assembly line inspector, all of which could be replaced by current AI. A second quadrant, Slow Creep, characterized by low social interaction but high dexterity, includes jobs where the role of AI will become more and more important but where automation will not happen abruptly, this includes plumber, house cleaner, taxi driver, and aerospace mechanic. A third quadrant, Human Veneer, requires high social activity but low dexterity and includes jobs such as bartender and waiter. Finally, the last quadrant, the Safe Zone, includes activities that are both highly social and require high dexterity, including physical therapist and hairstylist. Similarly, Lee performs this analysis in a second approach that looks at cognitive labor.

Instead of thinking of AIs as tools or as agents, what Lee's analysis teaches us are the features of the behaviors where the implementation of AI can be more pervasive to the point of actual replacement. What Lee points out is that, so far, AI possesses three essential non-technical features that will determine its role in human endeavors: artificial intelligence is good at 1) low dexterity but highly structured environments, 2) when it is geared towards optimization and automation, and 3) in environments where the "human touch" is unnecessary. Art lies somewhere in between all these quadrants, because art is much more than just the production of goods (artworks). There are aspects of art production that can require lower dexterity, less human interaction, such as the production of prints or the analysis of thousands of images, but there are other aspects that require the opposite, high dexterity and high human interaction. Delegating some of these aspects to AI, while still controlling or managing the overall artistic creation is, we suggest, what can make AI an artistic medium.

ARTIFICIAL INTELLIGENCE AS MEDIUM

Artists use technologies in myriad ways. The abundance of labels like *digital art*, (*new*) *media art*, *information arts*, *artsci*, etc., is already an indicator of the heterogeneity and elasticity with which contemporary artists approach and engage with new technologies. This heterogeneity can give the impression that these practices do not possess any particular artistic medium and, thus, that they are not entirely different from other contemporary artistic practices, in which any object or material can become the artwork's medium. Technological arts, however, exist in a paradoxical continuum between medium specificity and immaterial performativity. In this continuum, the use of a specific technology, like virtual reality or the Internet, with its unique features, largely shapes the discourses around the artwork. In this sense, technology becomes an artistic medium in its own right.

What is an artistic medium? Sometimes *medium* refers to the material base of an artwork (ink, wood, marble) or the specific technique used to create it (oil on canvas, etching, *impasto*); other times it is used to refer to a particular style, genre, or art tradition (pointillism, calligraphy), or even the immaterial or conceptual idea imprinted on the work (light, gestural expression, movement). In the 20th century, the idea of an artistic medium as being different from the physical medium of a work began to be formulated as a way to understand modern and contemporary artistic practices that questioned the primacy of materials over ideas or concepts - mostly associated with Greenberg's *medium specificity*. When discussing the medium of painting, Joseph Margolis (1980) explains that, in contrast to materials such as pigments and canvas (i.e., the physical medium), the artistic medium consists in the "purposeful system of brushstrokes"; in other words, the technique and ulterior intention carried out by the artist. In similar vein, David Davies implements Margolis's argument into the performing arts and notes that, in dance, "the physical medium of bodily movements is to be distinguished from the artistic medium of articulated steps" (Davies 2005: 183).

But artistic medium could also be understood in a broader sense. For Niklas Luhmann, a medium is a channel through which communication occurs (in this, mediums and media coincide); however, according to Luhmann, mediums differ from other materialities in that they allow a "high degree of dissolution" while also displaying the "capacity for fixation of shape" (Luhmann 1987: 102). By this, Luhmann means that a medium is flexible but it must also allow specific instantiations to emerge. In Luhmann's account, language and money are both mediums, since both are dissoluble while also fixable into discrete forms (language can be fixed into phrases and sentences, and money can be fixed into quantities and balances). In this sense, Luhmann argues, a medium cannot exhaust itself since different iterations of shape will not affect the medium overall. Mediums can also build on existing mediums as second and third degree mediums. A medium can assume the existence of a medium and thus become a *higher degree medium*, which itself can be assumed by another medium and so on, *ad infinitum*, until society itself becomes a medium - or in Luhmann's terms, a *system*.

Luhmann's notion of medium embodies the idea that an artistic medium is not only confined to the physicality of a specific material; instead, a medium emerges as a sort of special system, or what Jacques Rancière (2011) refers to as a "specific sensible milieu." This system or milieu might be anchored in a material element (such as paint, ink, or marble), but it is enriched by a larger system that nurtures its possibility as artistic medium as well as a specific tradition that delineates the extent and the limits of its mediality.

We contend that the technology of machine learning—which powers AI systems—is the potential artistic medium in question. The specificity of this medium lies not only in its ability to automate artistic processes but also in its possibility to rethink the author's identity in view of delegating certain aspects of

a creative process to an intelligence that is not entirely human. While the system *makes* decisions over patterns and large data sets, a human artist guides the overall project and the discourses inscribed onto the system—which can include the adscription of agency as an artistic gesture. In this sense, the *signature* of the AI system on *the Edmond de Belamy* portrait can be read as part of the artistic statement rather than as a sign of agency by the system. To be clear, following Lee’s approach (2018), we base our assessment on current (and not hypothetical) AI. The problem of meta-motivation (the drive to do art), which we have discussed before (Suryna & Guzman 2018) is a debate that certainly requires further analysis but it is also a feature that current AI systems do not possess. As Lee (2018) points out, artificial intelligence are not systems that emerge from natural selection, therefore survival drives such as competition, dominance, and volition, are not traits that can emerge *naturally* within them. If artificial consciousness is to be *awoken* in the future, Lee points out, it will happen with a yet-to-be-invented technology, but certainly not through what we call today machine learning.

COMPUTER ART—A NEW MEDIUM CREATES NEW AGENTS

The controversy that the work by Obvious generated in 2018 was partially due to the fact that the creators and the Christie’s, as we discussed earlier, presented it as a completely new phenomenon. Art critic Jerry Saltz (2018), however, contextualized the work from various angles such as its aesthetic properties (i.e. image overlay that can be traced back to the 1950s) but, more importantly, its mode of production, which Saltz relates back to Sol LeWitt’s written instructions and other instruction- and algorithmic-based art of the 1970s.

AI as an artistic medium can be rightfully seen as heir to the use of algorithms in computer art of the 1960s and 70s. Early computer artist Frieder Nake associated the idea of computers becoming creative agents with the failure to “see the dramatic change in artistic creation from material to sign, from machinistic to deliberate semiotics” (2012:74). Nake observes that the challenge of early computer art was to make a computer do something it was not intended for, at least in the first place. Having defined the creative process as a process of overcoming the material’s resistance to the artist’s idea or intention, Nake reserves the role of such material to algorithms. The algorithm, as new artistic material, brought with it a new artistic ontology, in which the identity of the artist and that which makes up a work of art were redefined. As Nake succinctly observed, the artist’s role shifted from the generation of artefacts to specifying a set of conditions that a machine has to satisfy in order to generate certain outcomes. Nake dubbed this new artist as *algorists*, artists who “think their work and let machines carry them out” (2012:63). Thus the production of the artwork was separated from its conception operationally. Artistic skills also changed as the artist was no longer, at least directly, engaged in the work with tangible materials but busied themselves with writing algorithms. The work of art itself

shifted from an individual and tangible piece to entertaining the possibility of a potentially unlimited set of such pieces that an individual object of art thus represents (Nake 2012:85).

In a very similar way, generative art took on new possibilities afforded by generative algorithms as to redefine the role of the artist in the creative process and what constitutes the work of art. Generative and especially interactive generative art problematized artistic autonomy by way of handing over some of the creative decisions to the programs, as well as arriving at outcomes or sustaining interactions between the system, environment, and the audience, which were unpredictable to the designers of the system. Artists saw the value of their work in the agency of the system and the participating audience inasmuch as the artist's intervention into the creative process was restricted and the authorship for the work of art *redistributed* among the system, its designers/artists, the audience and/or environmental factors (Boden 2010). Thus, the new medium—the program and the hardware that implements it—comes with a discourse in which this medium is presented, or even disguised as the agent that takes over some of the functions traditionally performed by the artists, transcends the artist's limitations in exploring new possibilities, or takes on unlimited amount of configurations not foreseen by the artist.

CONCLUSION

The polarization between conceptions of AI systems as tools or as agents of artistic production seems to constrict fruitful discussions on the meaningful incorporation of these systems into the art system. An expanded notion of artistic mediality, understanding machine learning and artificial intelligence as artistic mediums in their own right, can serve as a better approach for the appreciation of artificial intelligence in art production. More than mere tools but avoiding claims of non-human agency, mediums are aesthetic arenas that offer possibilities as well as constraints.

As a final thought, we would like to ponder a possible model to understand the current integration of artistic AI systems into the system of art. We see this model in so-called outsider art. On the surface, the value of outsider art seems to lie in the circumstances of its creation, in who created the work. Often belonging to marginalized groups based on race, education, disability, etc., outsider artists are distanced from existing structures of art production and conventions that allow them achieve *honesty* and *inventiveness* that are thought to be compromised in the work of professionally inscribed artists. Outsider artists do not build their artistic identity by contextualizing their work, they are *discovered*: their artistic identity is articulated by critics, commentators and especially other artists who explore creative possibilities of discovered artists' artwork. The value of AI-generated art also seems to lie in the circumstances of its production, i.e. by that *intelligence* that is not entirely human. Similarly, artistic AI systems can be integrated through artists exploring the creative possibilities these systems afford and articulating their identity through this medium.

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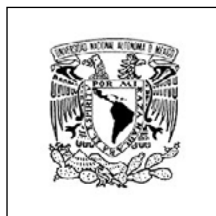
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